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a connector body having a receiving part that extends along the front side of the module being in a connection position and a groove provided in a rear face thereof into which the front side of the module is inserted, said groove having contacts provided therein which contact the conductive pad on both a top surface and a bottom surface of the module when the module is placed in an insertion/withdrawal position while allowing the pad to shift in a direction of insertion/withdrawal when the module is in the insertion/withdrawal position in which the rear side is at a higher level than in the connection position, and having a supporting part that extends rearward from the receiving part to support a left side, a right side and a bottom of the module in the connection position;

a metallic cover that is put over and is engaged with the connector body to sandwich the module between said metallic cover and the supporting part to thereby maintain the module in the connection position, said metallic cover including a window for exposing the semiconductor chip when the module is placed in the connection position, and a heat sink secured to said metallic cover and contacts the semiconductor chip to dissipate heat therefrom,

wherein at least one of said metallic cover and said heat sink covers said contacts and the conductive pad to exhibit a shielding function against electromagnetic waves.

#### REMARKS

The Examiner's Action dated July 13, 2001 has been received and its contents carefully noted. In view thereof, claims 1, 4, 9, 15 and 20 have been amended in order to better define that which Applicants regard as the invention. As previously, claims 1-20 are presently pending in the instant application.


Referring now to the Official Action, particularly page 2 thereof, claims 1 and 20 have been objected to as including a minor informality. Particularly, the Examiner notes that the phrase "the board plane" in independent claims 1 and 20, line 3, should be "a board plane". As can be seen from the foregoing amendments, each of claims 1 and 20 have been amended to recite "a plane of the board". Accordingly, it is respectfully submitted that Applicants' claimed invention is now in proper formal condition for allowance.

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Additionally, claims 1-20 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, claims 1 and 20 have been rejected in that the phrase "the phase and back" lacks antecedent basis. Again, as can be seen from the foregoing amendments, each of independent claims 1 and 20 have been amended to recite that the groove has contacts provided therein which contact the conductive pad on both a top surface and a bottom surface of the module when the module is placed in an insertion/withdrawal position. Accordingly, it is respectfully submitted that proper antecedent basis is now provide for all elements set forth in Applicants' claimed invention and consequently, it is respectfully submitted that Applicants' claimed invention as set forth in each of claims 1-20 is now in proper formal condition for allowance.

Claims 1-4, 9, 14 and 15 have again been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,769,668 issued to Tondreault in view of U.S. Patent 5,761,036 issued to Hopfer et al. This rejection is respectfully traversed in that the combination proposed by the Examiner neither discloses nor remotely suggests that which is presently set forth by Applicants' claimed invention.

As can be seen from the foregoing amendments, each of independent claims 1 and 20 have been amended in order to better define that which Applicants' regard as the invention. Particularly, independent claim 1 has been amended to recite a connector for a module that connects the module having a semiconductor chip mounted on a rectangular board and a conductive pad on a front side of the board with the connector comprising a connector body having a receiving part that extends along the front side of the module in a connection position and a groove provided in a rear face thereof into which the front side of the module is inserted with the module further including a lateral support part that extends rearward from the receiving part to support a left side, a right side and a bottom of the module in the connection position and metallic cover including a first connection means for connecting to said receiving part of said connector body and a second connection means receivable in said lateral supporting part wherein the metallic cover is put over and is engaged with the connector body to sandwich the module between the metallic cover and the supporting part to thereby maintain the module in the connection position. More specifically, Applicants' claimed



invention has been amended to recite a particular connection between the metallic cover and the connector body. That is, as can be appreciated from Applicants' specification, as well as the several figures, a first connection is provided between the metallic cover and the connector body adjacent to the receiving part of the connector body. Once the board is positioned within the contacts, the connector body is subsequently connected by a second connection means which is receivable in the lateral supporting parts of the connector body. Clearly, the combination proposed by the Examiner would not achieve such a structure.

As noted in Applicants' previous response, the patent to Tondreault discloses a module alignment apparatus for an electrical connector which includes a connector body having a receiving part including contacts provided in a groove that contact the conductive pad on a top and bottom surface of the module, a supporting part which extends rearward from the receiving part and a positioning mechanism to hold the module in the forward-rearward direction as appreciated by the Examiner. This reference further includes locking members positioned along lateral edges of the support part which lock the module in place with respect to the connector body. As the Examiner can readily appreciate, the module extends lengthwise far beyond the ends of the support part with the locking mechanism maintaining the module in place with respect to the connector body. This reference further includes a lateral alignment mechanism for aligning the module with respect to the contacts.

As the Examiner further readily appreciates, the patent to Tondreault clearly fails to disclose or remotely suggest any type of cover to hold the module in place or to protect the module. Clearly, it is unnecessary to provide such a cover for maintaining the module in its connected position in that the patent to Tondreault includes locking mechanisms along the lateral edges of the support part. As to the patent to Hopfer et al., this patent discloses a socket assembly for electrical component which includes a well known socket body which receives an IC package therein with the use of a retention spring 16 for retaining the IC package 12 within the socket 14. As the Examiner notes, the retention spring of Hopfer et al. is pivotally secured to one peripheral edge of the socket and releasibly secured to an opposing peripheral edge of the socket. Clearly, this reference fails to disclose the particular cover set forth in accordance with Applicants' claimed invention. Moreover, in that the construction

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of the Tondreault connector body fails to include an opposing lateral edge, it is inconceivable that one of ordinary skill in the art would resort to the teachings of Hopfer et al. to modify the Tondreault connector body in the manner suggested by the Examiner.

It is well settled that the mere fact that the prior art may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention obvious unless desirability of such modification is suggested by the prior art, the claimed invention cannot be used as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992). That is, the Examiner is of the position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a cover as taught by Hopfer et al. to keep the module from moving from the connection position in accordance with the teachings of Tondreault. Applicants respectfully submit that one of ordinary skill in the art clearly would not be motivated in the manner suggested by the Examiner.

Specifically, one of ordinary skill in the art would not resort to modifying the teachings of Tondreault in order to include a second mechanism for maintaining the module in the connected position in that the patent to Tondreault already includes such a mechanism. Clearly, one of ordinary skill in the art having the teachings of Tondreault before him and desiring to maintain the module in the connected position would not resort to the teachings of Hopfer et al. in that the specific teachings of Tondreault already include such a mechanism. Furthermore, it is impossible to apply the cover disclosed by Hopfer et al. to the connector body of Tondreault. That is, as noted hereinabove, the connector of Tondreault like that of Applicants' claimed invention does not include an opposing peripheral support and consequently the cover referred to in Hopfer et al. would be impossible to apply to the connector body of Tondreault. Moreover, in that modules placed in the connector body of Tondreault may be of various lengths, one of ordinary skill in the art clearly would not modify the connector body of Tondreault in order to include such an opposing peripheral support. Further, as is specifically recited by Applicants' claimed invention, the metallic cover includes a first connection mechanism for connection to said receiving part of the connector body and a second connection means receivable in said lateral supporting part. That is, the metallic cover

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as set forth in accordance with Applicants' claimed invention positively connects to the lateral supporting parts of the connector body. This is clearly not the case in Hopfer et al. Moreover, should the cover of Hopfer et al. be modified to connect to one peripheral wall as well as the two adjacent peripheral walls of the socket rather than the opposing wall of the socket, the retention spring effect of the tension spring 16 to urge the IC package 12 downwardly with a biasing force would be lost. The leg portions 72 and 74 are slightly curved so as to produce the biasing effect on the IC package. If the retention spring 16 were secured to the adjacent or lateral walls of the socket, this biasing nature of the retention spring would be virtually eliminated. As the Examiner can readily appreciate from Figures 3 and 8, the retention spring is maintained out of contact with the lateral edges of the socket which permits the greatest amount of biasing effect of the retention spring on the IC package. Accordingly, it is respectfully submitted that one of ordinary skill in the art would not be motivated in the manner suggested by the Examiner in that the Tondreault reference already includes a mechanism to keep the module from moving from the connecting position and consequently one of ordinary skill in the art would not be motivated to include yet a second mechanism for maintaining such connection. Moreover, one of ordinary skill in the art would not resort to the teachings of Hopfer et al. in that it is not possible to apply the connector body of Tondreault with the cover as set forth by Hopfer et al. as noted hereinabove.

Therefore, in view of the foregoing, it is respectfully submitted that Applicants' claimed invention as set forth in independent claim 1, as well as those claims which depend therefrom, clearly distinguish over the combination proposed by the Examiner and are in proper condition for allowance.

Referring now to page 3 of the Office Action, claims 5, 6, 10, 11, 16, 17 and 20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tondreault and Hopfer et al. as applied to claims 4, 9 and 15 above and further in view of U.S. Patent No. 3,877,064 issued to Scheingold et al. This rejection is respectfully traversed in that the patent to Scheingold does nothing to overcome the aforementioned shortcomings associated with the prior combination proposed by the Examiner.

While the patent to Scheingold may disclose the use of a heat sink which is provided over

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a conductive member to dissipate heat from the conductive member, this reference clearly fails to overcome the aforementioned shortcomings associated with the prior art combination proposed by the Examiner and further fails to disclose that which is presently set forth by Applicants' claimed invention.

With respect to claims 5, 6, 10, 11, 16 and 17, each of these claims are either directly or indirectly dependent upon independent claim 1 and include all of the limitations thereof. Accordingly, it is respectfully submitted that these claims are likewise believed to be in proper condition for allowance for the reasons discussed hereinabove.


With respect to independent claim 20, this claim recites a connector for a module that connects the module including a connector body having a receiving part for receiving the module and a metallic cover which is put over and engaged with the connector body to sandwich the module between the metallic cover and the supporting part to thereby maintain the module in the connection position. The metallic cover further includes a window for exposing the semiconductor chip when the module is placed in the connection position and a heat sink secured to the metallic cover which contacts the semiconductor chip to dissipate heat therefrom. Clearly, the combination proposed by the Examiner fails to disclose or remotely suggest such features. That is, as the Examiner can readily appreciate from the teachings of Scheingold et al., the heat sink 68 referred to by the Examiner is not secured to the cover but secured directly to the IC package. That is, as noted in column 2 of the Scheingold et al. reference, the IC package consists of a substrate 62 on which are fixed pads 64. Above the substrate 60 is a heat sink 68 and below is a cover 70 which protects the chips. The heat sink is applied directly to the IC package and is not secured to the cover as is specifically recited by Applicants' claimed invention. Further, reference is made to Figure 3 of the Scheingold reference wherein the heat sink 68 is spaced from the bracket 28, which the Examiner refers to as a cover. Accordingly, it is respectfully submitted that the patent to Scheingold fails to disclose or remotely suggest that which is specifically recited by Applicants' claimed invention, and consequently it is respectfully submitted that Applicants' claimed invention as set forth in independent claim 20 clearly distinguishes over the combination proposed by the Examiner and is in proper condition for allowance.

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Claims 7, 8, 12, 13, 18 and 19 have again been rejected under 35 U.S.C. §103(a) as being unpatentable over Tondreault and Hopfer et al. as applied to claims 4, 9 and 15 above and further in view of U.S. Patent No. 4,978,638 issued to Buller et al. This rejection is respectfully traversed in that the patent to Buller does nothing to overcome the aforementioned shortcomings associated with the prior art combination proposed by the Examiner.

In rejecting Applicants' claimed invention, the Examiner states that the Buller reference teaches the use of a contacting part to transfer the thermal energy to a heat sink and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the contacting part as taught by Buller to transfer the thermal energy to the heat sink. To the contrary, Applicants' claimed invention specifically recites a metallic cover to which the heat sink is applied. The essence of the invention set forth by Buller et al. is the application of the heat sink to a plastic package. That is, the essence of the Buller disclosure is a mechanism for cooling high power devices in molded plastic packages. Again, as noted hereinabove, Applicants' claimed invention cannot be used as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. Clearly, there can be found no motivation in the teachings of Tondreault as modified by Hopfer et al. which would lead one of ordinary skill in the art to apply the teachings of Buller et al. Moreover, there can be found nothing in the Buller et al. or in that of the cognizance of one of ordinary skill in the art which would lead one to apply the teachings of Buller et al. to the previous combination proposed by the Examiner. It is only through Applicants' claimed invention that the desirability for such modification even remotely comes to light. Accordingly, it is respectfully submitted that Applicants' claimed invention has set forth in each of dependent claims 7, 8, 12, 13, 18 and 19 clearly distinguish over the combination proposed by the Examiner, include all of the limitations set forth in independent claim 1, and are in proper condition for allowance for the reasons discussed hereinabove.

Referring now to page 4 of the Office Action, and particularly, the Examiner's Response to Applicants' previous arguments, it is respectfully submitted that Applicant provides ample evidence as to why one of ordinary skill in the art would not resort to the teachings of Hopfer et al. as suggested by the Examiner. While the Examiner states that Hopfer et al. clearly states the use of a



metallic cover sandwiching a module between the cover and the supporting part to maintain the module in the connecting position, the requisite motivation for modifying the teachings of Tondreault as suggested by the Examiner is certainly not present. Applicant is not misinterpreting the requirement of a teaching or motivation to combine or modify the prior art, found in the reference themselves, or in the knowledge of a skilled artisan, by requiring a statement of a deficiency in the prior art, Applicants merely allude to the particular teachings of Tondreault, that being a presence of a connector for maintaining the module in the connected position, and consequently one of ordinary skill in the art would not be motivated to resort to the finding of a connector mechanism to maintain the module in the connected position in that such already exists. The Examiner further states that the fact that a modification would be redundant does not render the modification non-obvious. However, the Examiner provides no basis for such conclusion. The Examiner is of the position that one of ordinary skill in the art having the teachings of Tondreault before them, and wishing to maintain the module in the connected position, would resort to teachings other than that already disclosed in Tondreault. It is Applicants' position that one of ordinary skill in the art would not search for a mechanism to maintain the module of Tondreault in the connected position in that such mechanism already exists in the teachings of Tondreault. Moreover, as noted hereinabove, it is not possible to modify the teachings of Tondreault to include the cover of Hopfer et al. nor would it be prudent to modify the teachings of Hopfer et al. so as to be accommodated in that of Tondreault.

With respect to the teachings of Scheingold et al., the Examiner notes that the features upon which Applicants rely in the previous response are not specifically recited in the rejected claims. Again, as can be seen from the foregoing amendments, independent claim 20 has been amended in order to positively recite that the heat sink is secured to the metallic cover and contacts a semiconductor chip to dissipate heat therefrom. Accordingly, as noted hereinabove, the teachings of Scheingold et al. to render obvious that of Applicants' claimed invention.

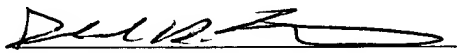
Therefore, in view of the foregoing, it is respectfully requested that the objections and rejections of record be reconsidered and withdrawn by the Examiner, that claims 1-20 be allowed, and that the application be passed to issue.

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Should the Examiner believe a further conference would be of benefit in expediting the prosecution of the instant application, he is hereby invited to telephone counsel to arrange such a conference.

Respectfully submitted,  
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**Marked up copy of amended claims**

1. (Twice Amended) A connector for a module that connects the module, the module having a semiconductor chip mounted on a rectangular board and a conductive pad on a front side of the board, to a printed circuit board in a position wherein [the board plane] a plane of the board is substantially parallel to the printed circuit board,

said connector comprising:

a connector body having a receiving part that extends along the front side of the module being in a connection position and a groove provided in a rear face thereof into which the front side of the module is inserted, said groove having contacts provided therein which contact the conductive pad on both [the face and back] a top surface and a bottom surface of the module when the module is placed in an insertion/withdrawal position while allowing the pad to shift in a direction of insertion/withdrawal when the module is in the insertion/withdrawal position in which the rear side is at a higher level than in the connection position, and having a lateral supporting part that extends rearward from the receiving part to support a left side, a right side and a bottom of the module in the connection position; and

a metallic cover [that] including a first connection means for connection to said receiving part of said connector body and a second connection means for connection to said lateral supporting part; wherein said metallic cover is put over and is engaged to the connector body to sandwich the module between said metallic cover and the supporting part to thereby maintain the module in the connection position.

4. (Twice Amended) A connector for module according to claim 2 wherein at least one of said connector body [or] and said metallic cover is provided with a positioning mechanism that positions the module in a front-rear direction when the module is set into the connection position.

9. (Twice Amended) A connector for module according to claim 3 wherein at least one of [either] said connector body [or] and said metallic cover is provided with a positioning mechanism that position the module in a front-rear direction when the module is set in connection position.

15. (Twice Amended) A connector for module according to claim 14 wherein at least one of said connector body [or] and said metallic cover is provided with a positioning mechanism that positions the module in a front-rear direction when the module is set into the connection position.

20. (Amended) A connector for a module that connects the module, the module having a semiconductor chip mounted on a rectangular board and a conductive pad on a front side of the board, to a printed circuit board in a position wherein [the board plane] a plane of the board is substantially parallel to the printed circuit board,

said connector comprising:

a connector body having a receiving part that extends along the front side of the module being in a connection position and a groove provided in a rear face thereof into which the front side of the module is inserted, said groove having contacts provided therein which contact the conductive pad on both [the face and back] a top surface and a bottom surface of the module when the module is placed in an insertion/withdrawal position while allowing the pad to shift in a direction of insertion/withdrawal when the module is in the insertion/withdrawal position in which the rear side is at a higher level than in the connection position, and having a supporting part that extends rearward from the receiving part to support a left side, a right side and a bottom of the module in the connection position;

a metallic cover that is put over and is engaged [to] with the connector body to sandwich the module between said metallic cover and the supporting part to thereby maintain the module in the connection position, said metallic cover including a window for exposing the semiconductor chip when the module is placed in the connection position, and a heat sink [which] secured to said metallic cover and contacts the semiconductor chip to dissipate heat therefrom,

wherein at least one of said metallic cover and said heat sink covers said contacts and the conductive pad to exhibit a shielding function against electromagnetic waves.